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1893

WORLD'S FAIR

Montana

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Exhibit at the World's Fair

and a Description

of the various Resources of the State

■ ■ ■ ■

Mining, Agricultural and Stock-Growing

■ ■ ■ ■

Presented with the Compliments of

The State Board of World's Fair Managers

BUTTE, MONTANA
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1893

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THE MONTANA EXHIBIT.

THE Exhibit of the State of Montana at the World's Columbian Exposition, to which the attention of the readers of these pages is respectfully directed, is a fair index of the resources of one of the youngest States in the Sisterhood, and may well command from the visitor more than a passing observation.

It will not be found that Montana excels in the extent and variety of the articles placed on exhibition, or in lavish expenditure to display the same effectively; nor could this be reasonably expected from an infant commonwealth, whose confines were scarcely crossed by the Iron Horse a decade ago. However, what may be lacking in variety and extensiveness, as compared with the exhibits from the older States, is in part at least made up by the excellence of what is offered, and its faithfulness in representing the resources, industries and opportunities of the State.

The leading industry of Montana at the present time is that of mining—the production and reduction of gold, silver, copper and lead ores, and the mining of coal. This does not mean that the State is deficient in agricultural, stock-growing or manufacturing advantages, but that under the incentive of greater profits, our mineral resources are in a more advanced stage of development. And hence the prominence of the Mineral Exhibit. When it is borne in mind that mining is not only the leading industry in Montana, but that the State outranks all others in the value of the production of gold, silver and copper and produces annually more of the latter metal than all the rest of the United States, is not the Mineral Exhibit eminently deserving of the prominence

it enjoys? What other state or political division can lay stronger claim to a statue, cast in heroic mold, and in one of the precious metals, commerative of her mineral wealth and greatness!

In the Department of Agriculture the display made is a creditable one, and yet is not complete and extensive enough to do exact justice to this great industry. However, additions will be made of grains, vegetables, fruits and grasses from the crop of 1893, at a later period, which will add much to the attractiveness of this department.

Under the regulations of the Board of Managers of the World's Columbian Exposition, the exhibition of live stock has been deferred until August, at which time the State Board of Managers for Montana hope and expect to make a showing commensurate with the importance of this industry.

The women of Montana have been most active and zealous in the work of promoting the State's interests at the Exposition, and whatever of success has been achieved, no small share of credit is due to their co-operation and assistance. We believe a test would prove that the ladies of Montana, in proportion to their numbers, have achieved better results and made a more creditable exhibition along the lines included in the Ladies' Department, than those of any other state of the Union. The Board of World's Fair Managers acknowledge with pleasure the hearty co-operation of the ladies of the State, and refer with pride to the results of their labors.

The chief resources of Montana are Mining, Agriculture and Stock-growing, and no more valuable information as regards the exhibits in each of these departments could be given than to sketch their history and progress, and to submit the advantages offered in these fields for investment and home-making. In addition to the description of exhibits, this kindred purpose, so far as possible in the limits of a small pamphlet, will be undertaken in this publication.

Historical and Descriptive.

THE extensive area within the confines of Montana was a portion of Louisiana, as claimed and occupied by France, and became an integral part of the United States when President Jefferson concluded his big real estate deal with the first Napoleon, acquiring ownership of that immense tract of territory, mostly unexplored, and which is now the garden and treasure vault of the world. This purchase was made at the beginning of the present century, the consideration being $15,000,000, a sum that Montana alone now produces in gold, silver, copper and lead every three months. The portion of the purchase known as Montana became afterwards, as new Territories and States were carved out, a part of Missouri, Oregon, Nebraska, Dakota and Idaho, and was created into a separate Territory, with its present boundaries, May 26, 1864, two years after the gold discoveries, and when a considerable floating population had been attracted within her borders by the fame of the golden sands of Alder and contiguous gulches.

It is not the intention to go into historical details of the early settlement and progress of Montana—it would require volumes to do the interesting subject justice—but a brief outline of the most important events will lead up naturally to the Montana of to-day, with which we are most concerned. There is fairly good evidence that the first white men to enter the territory now comprising Montana were Jesuit missionaries from the St. Lawrence river, who first made these journeys across the trackless wilderness intervening, in the early part of the eighteenth century. In 1742 the Chevalier De la Varendrye, governor of Quebec, on a journey of exploration, erected the standard of France in Montana,

even on the peaks of the "shining mountains" (Rocky) that met his wondering gaze from the far-off plains of Assinniboine. The adventurous Frenchman left no complete record of this expedition, and there is a goodly share of romance and doubt connected with it.

The famous expedition of Lewis and Clarke in 1804-5, under the auspices of President Jefferson, was the first systematic exploration of this mountain region, and the report, or journal published by them is most interesting and accurate in detail, and gave to the world for the first time reliable information of this then *terra incognita*. The principal rivers, falls, mountain peaks, etc., were named by these explorers, and from them the government learned much of the vast extent and value of the late Louisiana acquisition. Following Lewis and Clarke came the Astor expedition, traversing Montana on its way to Astoria, on the Pacific coast, to found a headquarters for the fur trade of the Northwest. The hardships and trials of this adventurous party are interestingly related in Washington Irving's "Astoria."

Furs and peltries were the only products of what is now Montana that commanded attention at this period, and about 1830 the American Fur Company, of St. Louis, entered the field. They built their first "fort" at the mouth of the Marias river, and after various changes, established permanent headquarters at Fort Benton, on the Missouri river, in 1846, continuing operations until the decadence of the fur business.

The Catholic Missionaries were also early occupants of this field. Father De Smet built St. Mary's Mission in the Bitter Root Valley in 1842, and the succeeding year grew a small crop of wheat and other products, being doubtless the first white man to plow ground in Montana.

The next important epoch in the slow advancement of this region was the arrival of the first steamboat from St. Louis at Fort Benton, June 22, 1860, which

was the beginning of an important traffic on the upper Missouri River. In after years, as high as fifty cargoes in a season were discharged by steamers at Fort Benton, which became the *entrepot* of Montana and the Northwest Territory of Canada, holding this prestige until the railroads entered the territory in the early eighties.

The discovery of gold in Montana is the red letter event which led directly to its occupation and subsequent development. While gold was found some years earlier, it is a matter of record that the first sluice boxes for the washing of this precious metal were set on what is known as Gold creek, on May 8, 1860. "Diggings" were afterwards found at Deer Lodge, Bannack and other points, but the rich deposits of Alder gulch and Last Chance (present location of Helena) immediately attracted a horde of fortune seekers from many parts of the Union and the exciting and dramatic events of the fifties in California were re-enacted in the mountain gulches of Montana. Seven or eight years of activity in placer mining followed, and the yields of the shining metal in that period were fabulous almost. This large population had to be housed and fed. Naturally, towns, such as they were, sprang up like magic in the principal mining gulches, and a few, impelled by the tempting prices for all products of the soil, tried ranching and cattle-raising in a limited way in the adjacent valleys—and thus were the foundations laid for what are to-day the three important industries of the State, viz: mining, agriculture and stock-growing.

TOPOGRAPHY.

Montana, as the word indicates, is a country of mountains, but the name should lead no one to believe that the entire area is of this rugged character. Indeed, less than one-fourth of the State is mountainous, the general classification, as closely as can be estimated, being 30,000,000 acres agricultural lands, 40,000,000 grazing and

23,000,000 mountainous, out of a total area of 93,000,000 acres. But even the mountains have not the rugged precipitious character for which the same giant range is noted in States and Territories to the south, their elevation being much lower, and the passes more numerous and of gentler acclivity. While a few of the mountains are broken and rugged to the point of grandeur—particularly those in the southwestern portion of the State, in the vicinity of the National Park, and in the main range near the Canadian line—these are the exceptions rather than the rule. As a general thing the mountain slopes are gentle, so that there is often a blending of valley, bench, foot-hill and mount, with a difficulty of determining when the one ends and the other begins. This applies particularly to passes, over which wagon roads and railroads are easily constructed, thus putting all portions of the State, even though they be separated by mountain ranges, in direct and easy communication, facilitating commerce and the development of the natural resources of the State. In confirmation of these statements the following interesting figures from the report of Prof. Gannett of the Hayden survey may be offered:

Of Montana's 146,000 square miles, 51,600 square miles, or more than one-third of the State, has an elevation of less than 4,000 feet above the sea level, and 40,700 square miles, a less altitude than 3,000 feet, while the mean or average altitude of the State above the sea level—including valley, plateau and mountains—is only 3,900 feet.

By way of comparison note that, as shown by the same authority, only 9,000 square miles of Colorado's area, and none of Utah's, is a less altitude than 4,000 feet, while no portion of Colorado, Wyoming, Utah or New Mexico, is as low as 3,000. The mean or average altitude of other Rocky Mountain States and Territories is as follows:

Nevada 5,600 feet, New Mexico 5,660, Wyoming

6,400, Colorado 7,000—that of Montana being 2,260 feet less than the average of these four states and territories.

This difference of elevation, so favorable to Montana, may be further illustrated by the following comparative table, showing the altitude of points in Montana and other portions of the Rocky Mountain region:

TABLE OF ALTITUDES.

CITIES.	ALTITUDE.	CITIES.	ALTITUDE.
Anaconda, Montana	4,900	Denver, Colorado	5,170
Bozeman, "	4,838	Leadville, "	10,185
Butte, "	5.701	Santa Fe, N. Mexico	6,840
Helena, "	4,296	Alma, Colorado	11,044
Great Falls, "	3,010	Robinson, "	10,905
Fort Benton, "	2,814	Georgetown, Col	8,400
Missoula, "	3,195	Col. Springs, "	5,023
Billings, "	3,115	Fort Laramie, Wyo	4,519
Miles City, "	2,353	Pueblo, Col	4,679
Glendive, "	2,067	Central City, Col	8,300
Dillon, "	5,104	Montezuma, "	10,295

With the exception of three peaks, there are no mountains in Montana more than 11,000 feet in height, while in Colorado that is the average height of the summit of the range, and the elevation of some of the lakes and parks in the latter State is as much as 9,000 feet. There appears to be a sag of depression in the Rocky Mountain chain in Montana, rendering it the natural "gate-way" for transcontinental railroads and inter-ocean commerce. Besides the other advantages resulting from these moderate altitudes the effect upon the climate of the State is a marked one, and will be considered under a separate heading.

Montana is the third largest state in the Union, Texas and California leading her in extent of area. The length of the State from east to west varies from 460 to 540 miles, and its average width is 275 miles, making 146,080 square miles or 93,491,000 acres. This magnificient area will be better comprehended when it is understood that Montana is as large as Maine, New

Hampshire, Vermont, Massachusetts, Rhode Island, New Jersey, Delaware, Maryland and New York combined, with one-third of West Virginia thrown in for good measure.

The Eastern division (east of the mountains), which covers about three-fifths of the area of the State, comprises in the main valleys and rolling table-lands, the Rocky Mountains occupying the western portion, but intersected here and there by valleys of unsurpassed fertility. The Missouri river with its tributaries on the east and the Columbia on the west, have their rise in the mountains of this State and form a network or system of streams unequaled in number and extent in any portion of the Rocky Mountain region, and probably in the world, affording opportunities and advantages for a general system of irrigation, such as no other Western State can claim. The principal rivers are the Missouri, Clark's Fork, Yellowstone, Milk, Marias, Teton, Jefferson, Gallitin, Madison, Sun, Musselshell, Judith, Powder, Big Horn, Smith, Flathead, Kootenay, Missoula and Bitter Root. These principal streams, with their tributaries, taken in connection with the advantageous topography, render an extensive system of irrigation a comparatively easy problem and guarantee that in the near future the valleys and bench lands of Montana will be subjected by Ceres and made to blossom as the rose.

CLIMATE OF MONTANA.

There is one thing Montana cannot have on exhibition, much as it may be regretted, and that is her CLIMATE. It is doubtful if any other portion of the United States affords, from one end of the year to the other, a more even, salubrious and desirable climate than this State, its position along the northern international boundary line and in the heart of the Rocky Mountain region to the contrary notwithstanding. As has been shown, the average altitude of Montana's mountain range is

scarcely greater than that of arable valleys in States and Territories to the south, while over one-fourth the area of the State is less than 3,000 feet above sea level. These topographical features affect favorably the climate of the State, and taken in connection with the influence of the Chinook winds that intervene to temper the rigors of winter, render the climate of the State all that could be desired. These famous winds, originating, as some say, in the southern seas, warm as the breath of summer, descend from the upper air currents and rushing through our mountain gaps, change, as if by magic, winter into spring. A change of 70 or 80 degrees in temperature in a few hours, say from 25 degrees below zero to 50 degrees above, is not an unusual occurrence. These welcome winds prevail at irregular intervals in December, January and February, and so upset the calculations of Jack Frost as to much discomfort that befurred personage. Except in the higher altitudes sleighing for more than a few days at a time is not expected, and the writer remembers two winters at Fort Benton (on the Missouri river) when the matter of securing a supply of ice for the succeeding summer was a doubtful and perplexing question. One of these winters the river was never entirely frozen over. Plowing in January and seeding in February are by no means unusual occurrences with the Montana farmer, and the break-up of the Missouri river and its tributaries occurs from four to eight weeks earlier than at Bismarck, Yankton and other lower river points, over 1,000 miles east and south of Great Falls, Montana.

These statements should suffice to convince the most skeptical of the mildness of Montana's climate, but that each reader may draw his own conclusions, the subjoined tables from official records of the U. S. Weather Bureau are submitted with the hope that they will be closely studied:

MONTANA METEOROLOGICAL DATA BY MONTHS, 1892.

(Compiled from the report of E. J. Glass, Observer Weather Bureau, Helena, Montana.)

Months.	Mean Max.	Mean Min.	Mean (Max. and Min.)	Precipitation (inches.)	Cloudless days.	Partly cloudy.	Cloudy days.
January	29 3	5.7	18.8	.78	10	11	9
February	36 7	13.4	25.1	.43	12	9	8
March	46.	22.7	34.	.63	11	10	11
April	51.	28.2	39.5	1.34	6	13	11
May	58 6	35.5	47.2	1.28	9	10	12
June	70.9	46.5	57.8	4.33	11	9	10
July	82.8	50.1	66.9	1.58	18	10	3
August	82.8	50.1	66.4	.71	18	9	4
September	76.1	42.9	59.7	.51	14	10	6
October	63.5	31.7	46.8	.54	17	7	7
November	43 3	20.6	31.9	.98	5	12	13
December	27.2	8.5	17.4	1.21	6	11	14
Averages	55.7	37.9	42.6	14.32	137	121	108

The following comparative table is from the annual report of the Chief Signal Service officer, for the year 1891, being the latest at our command. The figures are interesting, and will at once convince the reader that Montana cannot be classed with the bleak and blizzard-swept portion of the Northwest, if such there be:

COMPARATIVE MEAN TEMPERATURE OF VARIOUS CITIES OF THE UNITED STATES.

(From the Report of the Chief Signal Service officer for the year 1891.)

	January.	February.	March.	April.	May.	June.	July.	August.	Septemb'r.	October.	Novemb'r.	December.	Mean.
Bismarck, N. D.	2.1	3.6	20.6	46.8	51.3	66.9	71.	66.8	56.4	46.2	37.	24.	40.8
Chicago, Ill	30.8	32.4	29.5	45.6	53.4	70.2	72.1	67.6	60.4	51.4	41.9	30 6	48.8
Dubuque, Ia	22.2	28 6	27.9	51.2	56.4	73.6	75.4	68.8	59.8	50.6	39.8	27.2	48.5
Duluth, Minn	12.2	16 6	21.6	40.6	43.2	57.5	66.3	60.7	55.1	45.0	34.4	22.6	39.6
Helena, Mont	7.2	16 8	35.3	45.6	54.0	58.9	70.6	66.8	57.4	46.2	37.4	30.2	43.9
Milwaukee, Wis.	26.	29.	26.6	44.3	50.0	67.9	71.2	65.7	49.2	49.4	39.8	28.1	46.4
New York, N. Y.	40.2	40.4	37.5	51.	60.6	70.4	73.4	72.3	66.8	55.5	45.9	31.4	53.8
Omaha, Neb	18.2	25.2	32.6	55.2	60.1	74.4	78.8	71.0	62.7	52.2	42.2	34.6	50.6
St. Paul, Minn	9.9	18.5	22.4	47.8	52.2	69.8	71.9	65.0	58.2	46.4	35.6	26.0	43.5
Spokane, Wash.	17.9	24.4	37 6	48.7	58.1	60.5	68.4	68.6	60.	47.8	38.4	38.2	47 4

COMPARATIVE WEATHER RECORD.

Cities.	Cloudless Days.	Partly Cloudy Days.	Cloudy Days.	Rainy Days.
Helena	145	121	99	106
Indianapolis	77	144	144	189
Milwaukee	116	121	128	139
Chicago	111	133	121	136
New York	82	150	133	144
Philadelphia	92	117	156	145
Portland, Me.	108	118	139	151
St. Paul	100	157	108	128

There is need for little in the way of comment to these tables One fact, however, should be dilligently borne in mind, viz: That by reason of the dry, rarified atmosphere of Montana, as compared with the humid air of the Central and Atlantic States, the same degree of cold as recorded by the thermometer does not mean the same thing. Twenty degrees below zero at Chicago, for instance, would be more severely felt and cause more suffering than 40 degrees below in Montana. If this difference were taken into the account, the isothermal line passing through the capital of Montana, would probably swing south to the northern line of Missouri, passing through Central Illinois, Indiana and Ohio and reach th/ Atlantic in the vicinity of the National Capital.

The last table shows that Montana is a land of sunshine. It has more cloudless days and less cloudy and rainy days than any of the cities taken at random for the purpose of comparative illustration.

Another point: The average precipitation in Montana for the year 1892, was 14.3 inches. It will be noticed that the greatest rainfall was in April, May, June and July, when the farmer's crops are growing and maturing, while August and September, the harvest time, show but little precipitation. Nature could not have worked out the arrangement in a more satisfactory way.

THE MINES OF MONTANA.

THE Montana mineral exhibit is near the south end of the Mines and Mining Building, and is worthy of inspection by all interested, directly or from curiosity, in the mining and reduction of the precious and other metals. The display includes many of the known minerals, in various forms and combinations, and some of the collections are beautiful in the extreme and of great value. There are altogether about fifty tons of specimens, collected in the mining counties of the State, the principal exhibits in this line being from the counties of Silver Bow, Deer Lodge, Lewis and Clarke, Meagher, Cascade, Beaverhead, Madison, Jefferson, Missoula, Fergus, Park and Choteau. They tell the story of Montana's mineral wealth—her wealth of gold, silver, copper, lead, iron and coal— emphasizing the official reports which place Montana at the head of all other States and Territories of the Union as regards the out-put and value of her mineral products.

In the center of the mineral exhibit, the chief of all attractions, stands the silver statue, Justice, the largest figure ever before cast in any precious metal, so far at least as revealed in the annals of history, ancient or modern. The fame-loving Egyptians, Grecians and Romans carried statuary to extremes, seeking thereby to perpetuate the memory of their rulers and warriors and to do homage to their gods, but the enduring marble and bronze were the best material employed. It has been left for Montana to offer to the world a statue of Justice cast in the beautiful white metal that ribs her mountains and which has been classed as precious since

history began. In addition to its intrinsic value, and novelty, the statue is a work of art, and is certain to command an unusual share of attention. The statue was cast in Chicago, March 18, 1893, in the presence of a distinguished company and in the most successful manner possible. The description of this exceptional and beautiful work of art, as sent to the journals of the country on that occasion, by the Associated Press, is herewith given:

"Justice stands with one foot on a globe, and the entire outline of the splendid and massive figure gives the idea of a forward movement. The Goddess wears a tunic which drapes the figure from the swelling breast to a point just below the knee, but so perfect is the sculptor's work that every line of the nether limbs is visible, and the statue seems alive from the unshod feet to the bare arms and the graceful Grecian knot of hair upon which rests the starry crown of this modern Astraea. Immense strength and exquisite grace, together with a superabundance of life and movement, are the points which enchain the observer of the model at once. The left arm, beautifully modeled, holds aloft the historic scales, and the right grasps firmly the familiar two-edged sword, which points downward at an angle of forty-five degrees. The expression of the face is grave, but gracious, and the full orbed windows of the soul seem to pierce the future. The tunic, or rather the drapery, with its metal girdle, is Grecian even to the smallest detail, and the robe is broidered most beautifully.

"The figure rests upon the back of a Montana eagle, also of solid silver. From the eagle to the top of Rehan's head the statue measures nine feet and rests upon a plinth of solid gold, the base being formed of mineral bearing rock. The whole has a height of fifteen feet. The silver was furnished by the First National Bank of Helena, through Ex-Governor S. T. Hauser, and Hon. W. A. Clark, of Butte. The gold in the plinth is

loaned by the "Spotted Horse" mine, of Maiden, Montana. The American Bronze Company, of Chicago, cast the immense affair, by far the largest statue of its kind in the world.

"To Montana belongs the honor of removing the bandage from the eyes of Justice, heavenly maid, who for no satisfactory reason has groped her way in darkness for 200 years or more. The first sculptors, the earliest painters, the primeval wood engravers all depicted Justice with very wide open eyes. All the way along from 1500 down to the eighteenth century, Justice was able to see as well as any of her classical sisters, and whoever put out her eyes, or bandaged them, simply to conform to the Roman idea that Justice is blind to the individual, should be execrated. 'Justice, sir, is the great interest of mankind on earth,' said Daniel Webster, and now let us hope we shall never find her blind again. The older artists were wont to show her with a cornucopia in one hand and a sceptre in the other."

By way of comparison and to present in a striking way an idea of the extent of Montana's treasure of silver, we can say that the product of her silver mines for the year 1892, would make one thousand such statues as this one, and perhaps have enough left to coin a few thousand silver dollars.

It would require more space than can be allotted in this pamphlet to attempt a description in detail of the Montana Mineral Exhibit, or even to do justice to its principal features; but the labels and catalogues, together with the information that will be cheerfully given by the gentlemen in charge of the exhibit, when the same is sought, constitute a guarantee that no one desiring knowledge need depart unsatisfied. Among many hundred articles on exhibition in this department deserving of mention, the following few may be cited:

Very fine and large specimens from the Atlantic Cable mine, of Deer Lodge county, especially two large

pieces of milk-white calcite, thickly covered with native gold, and one piece of gold, a perfect sponge, from which the gangue has been dissolved, leaving a mass of pure gold. The specimens are representative of many magnificent ones taken from this mine.

From the Granite Mountain mine, in Deer Lodge county, are a large number of very fine specimens, among which are several that are not found in other localities of the State. This mine has paid in dividends as high as $2,500,000 in a single year, and over $12,000,000 in the past eight years.

One specimen from the Bi-Metallic mine, in the same vicinity as the Granite Mountain, shows the "ribbon" vein structure to perfection, and contains about one thousand ounces of silver. It cannot but be greatly admired by geologists and mineralogists.

The exhibit of the products of the mine and smelter by the Parrot Company, of Butte, is very complete, covering every phase of the process of reduction from the crude ore up to the pure copper product. Other exhibits of this character, showing the varying products of mills and smelters of the State, are shown and will attract much attention.

The specimen of rhodochrosite loaned by Mr. J. K. Clark, of Butte, is one of the largest and most beautiful crystals of the character known.

The ores from the Elkhorn mine, of Jefferson county, will attract special interest, among the lot being one piece weighing 2,500 pounds, showing ruby silver in large quantities, galena and the "vein structure." This mine paid dividends amounting to $362,500 in 1892.

The specimens from the "Benton Group" property at Neihart, Meagher county, showing ruby, brittle, native and wire silver in large quantities, supplemented by the private cabinet (largely from the same source) of Mr. J. C. E. Barker, president and superintendent of the company owning these mines, is one of the valuable and interesting features of the exhibit.

The First National Bank, Merchants National Bank and Montana National Bank, of Helena; Larabie Bros. & Co., bankers, Deer Lodge, and two Butte banks, have loaned for exhibit splendid collections of gold nuggets gathered from time to time from the gulch mines of Montana. Of the private cabinets, the Newkirk collection of Butte and the Cameron collection of Deer Lodge are conspicuous. The former is one of the finest collections of gold ores to be found, and the latter is made up largely of rich specimens from the Cable mine, noted for the richness and beauty of its ores.

Many rare and valuable specimens owned by private parties are also shown, but to specify each would encroach too far on the limited space at our command.

All of the mining districts and camps of the State are represented to a greater or less extent, so that the exhibit is fairly representative of the mineral wealth and the great mining industry of Montana.

To those who have given a careful, or even a casual, inspection to the Montana mineral exhibit, a brief reference to this industry—noting its history and progress—can hardly fail of interest.

THE PLACER PERIOD.

The first known discovery of gold in Montana was made by a half-breed named Francois Finlay, otherwise called Benetsee, on what is known as Gold creek, in Deer Lodge county. This was in 1852, or soon thereafter. Finlay was an enterprising trader with the Indians, had traversed the continent from the Red river valley to the Pacific coast, and had seen miners wash gold from the gravel in California. He tried his hand at this on Gold creek, and while he secured a small quantity of gold, the business was not as profitable as trading trinkets, and perhaps fire water, for the fur of the beaver, otter, fox and other animals, so that no further attention was paid to the matter by Finlay or the

Hudson Bay Company factors, to whom he had sold the small quantity of gold extracted. The representatives of the trading company were not anxious that the gold seeker should invade their territory, and naturally they gave no currency to the discovery made, which was doubtless considered of little significance by them.

James and Granville Stuart, with a small party, returning in 1857 from California, heard, while in Utah, of these prospects, and determined to visit them. They spent the ensuing winter on the Big Hole river, and the following summer prospected Gold creek. Not finding rich diggings, and being without the necessary tools and supplies, they returned to the emigrant road, where for two years they traded with parties passing through to California, or the "States." In the spring of 1860 the party moved to the mouth of Stinking Water creek, but finding the Indians troublesome and dangerous, they proceeded to the mouth of Gold creek, where they began prospecting. Finding gold in paying quantities, and believing by the indications that the country would prove a rich one, the Stuarts forwarded a letter to their brother in Pike's Peak, requesting him to join them, and this communication was the direct cause of the subsequent stampede to Montana, or Idaho, as it was then known.

On the 8th day of May, 1860, Henry Thomas, called by his associates "Gold Tom," and who worked with the Stuart party on Gold creek, set up the first string of sluices in the new gold region, but as the pay was not good, his restless spirit asserted itself, and he soon started in quest of better ground. In the spring of 1862 John White discovered gold on Grasshopper creek, and as the gulches in that vicinity proved to be rich, they continued for over a year the center of mining activity, with Bannack, which became the first capital of the new Territory, as the principal camp of the district.

On May 23, 1863, Alder gulch was discovered by a

party of prospectors who were returning to Bannack from an unsuccessful trip to the Yellowstone country, and this important event marks the beginning of the grand rush of fortune seekers to the Montana gold fields. Virginia City became the principal town of the new camp, and by act of the Legislature, approved February 7, 1865, was made the capital of the Territory of Montana.

In 1864, Last Chance gulch was discovered, and as rich prospects were found, a stampede from the other mining camps followed, and the foundations of the City of Helena, present capital of the State, were laid. Next followed the discovery of Confederate gulch in Meagher county, where fabulously rich deposits, both gulch and bar were found, and at a later period, the gulch mines of Jefferson county, that yielded large returns. The placers of Deer Lodge county and various other parts of the Territory produced a large sum of gold, and for a period of six years, from 1862 to 1868 inclusive, placer mining was carried on with remarkable activity and many individual fortunes were made. The yield of the yellow metal during that short period was fabulous, as shown by the following estimates:

ESTIMATED YIELD OF THE PLACER MINES OF MONTANA FROM 1862 TO 1868, INCLUSIVE.

Madison county	$40,000,000.00
Lewis and Clarke county	19,360,000.00
Deer Lodge county	13,250,000.00
Meagher county	6,949,200.00
Beaverhead county	2,245,000.00
Emigrant gulch	80,000 00
Approximate total yield	$86,384,200.00
Value of gold and silver quartz mined to same date	6,000,000.00
Total	$92,384,200.00

Placer mining has continued from 1868 to the present time with more or less activity, but as the rich gulches

have been worked out the yield is modest compared with the former period.

QUARTZ MINING.

Quartz mining and the reduction by the various methods in vogue of the ores extracted from veins and leads is the industry that takes rank of all others in the State at the present time. While it is true that the first quartz claim in Montana was located near the head of Alder gulch as early as 1864, and later some effort was made in a crude way to mill free gold quartz ore, but little in this direction was accomplished until the cream of the placers was exhausted. Then prospectors and mining men began to give attention to the development of quartz mines and the treatment of ores, both by milling and smelting. Many mining districts were organized and claims located throughout the mountainous portion of the State, but the active development of the same and the large production of the precious and other metals did not begin until the advent of the railroads in 1881-3. After this period the largely reduced cost of machinery and of all products required for the milling and smelting of ores, as well as for the transportation of the ores and the products of the mills and the smelters, at once gave an impetus to mining operations, and Montana soon took rank as one of the leading producers of the precious metals, as well as of copper and lead, among the States and Territories of the Union. Prior to 1883 the production of copper and lead was an item hardly worth considering, while five years later the value of the State's output of these products in a single year was nearly $15,000,000. Improved machinery and methods have lent aid to the advancement of the mining industry, and further benefits in this direction are sure to accrue; but on the other hand, the low price of silver the past year has had a most depressing effect, retarding development and closing down properties that otherwise would have been operated at full blast.

The Engineering and Mining Journal of Jan. 4, 1893, publishes the total dividends paid by 86 mining companys of the United States during the calendar year 1892, the sum total being $13,443,918. Thirteen of these were Montana companies, the following being the list with the amount of dividends paid by each:

Rocky Fork Coal Co.	$100,000	Heckla Con.	$ 180,000
Parrot Co.	216,000	Helena & Frisco.	20,000
Bald Butte	20,000	Iron Mountain	135,000
Bannister	6,000	Jay Hawk	33,375
Bi-Metallic	200,000	Moulton	30,000
Elkhorn	362,500	Pandora	3,000
Granite Mountain	500,000		
		Total	$1,805,875

These dividends, however, do not begin to show the profits of the companies named, as usually a large portion of the net earnings goes into the purchase of additional mining ground, the development of properties, construction of additional mills or smelters, etc. Neither is the list of dividend paying mines complete. Besides, some of the largest companies—as, for instance, the Anaconda, which produces more copper than any other company in the world—do not make public their profits nor is their stock listed on any mining exchange. The next largest copper producer in the State is the Boston & Montana Company of Butte. It is not in the list of dividend payers for 1892, but as this company has expended about $2,000,000 in the last two years in the construction of a new smelting plant and electrolytic refinery at Great Falls, Montana, dividends could hardly be expected. The Sand Coulee Coal Company, which produced in 1892 300,000 tons of coal, is not found in the list of dividend payers, but the profits of the company for that year were not less than half a million dollars.

The following tables, showing the distribution by counties of the production of the metals, put Silver Bow (Butte) far in the lead of all others. Butte practically

produces all the copper of the State, and nearly one-half of the silver and gold combined. It is the greatest mining camp on earth, and the City of Butte, including its immediate suburbs, now claims a population of 35,000. The Montana mineral exhibit includes much of special interest from this great camp. Deer Lodge county ranks next to Silver Bow in the production of the precious metals, followed by Jefferson, Lewis and Clarke, Beaverhead, Meagher, Missoula and Madison as the principal producers in the order named.

The awakened interest in gold mining and the improvement in the processes of reduction, have brought about during the year 1892 a resumption of operations on properties abandoned several years ago, and as well have led to the initial development of many prospects heretofore practically untouched. During the year seven stamp mills, operating a hundred stamps, have been erected in the State and in addition five Crawford gold extractors, one Huntington and one Bryan mill and seven Cyanide plants, equal to probably one hundred stamps additional, have been built and operated in the State.

The Boston & Montana Company, of Butte, have just completed at Great Falls, at a cost of about $2,000,000, a new copper smelting plant and a large electrolytic refinery for the reduction of the copper matte into refined copper, being the first extensive plant of this character erected in the west. The ore is transported from the company's mines at Butte to the smelter, a distance of nearly 200 miles, the advantages gained to offset this long haul being an abundance of water, water-power for the production of electricity and other purposes and cheap fuel from the Sand Coulee coal mines near at hand. An Austin Pyritic smelter was erected at Boulder, Jefferson county, during the year, and also a 100 ton custom smelter at Butte.

The subjoined tables showing the production of gold, silver, copper and lead by the mines of Montana for

the year 1892, and for each of the years since the discovery of gold in the Territory, are from the official reports of the assayer in charge of the Assay office at Helena, Montana, and from reliable estimates where no official records are available:

TABLE SHOWING THE VALUE OF PRECIOUS METAL PRODUCTS OF MONTANA FROM 1862 TO 1892, INCLUSIVE.

YEARS.	Gold.	Silver.	Total.
1862-1867	$ 74,000,000	$.....	$ 74,000,000
1868	15,000,000	.....	15,000,000
1869	9,000,000	.....	9,000,000
1870	9,100,000	.....	9,100,000
1871	8,050,000	.....	8,050,000
1872	6,068,000	.....	6,068,000
1873	5,187,047	.....	5,187,047
1874	3,844,722	.....	3,844,000
1875	3,573,600	.....	3,573,600
1876	3,078,013	1,132,976	4,210,989
1877	3,200,000	750,000	3,950,000
1878	2,260,511	1,699,635	3,930,146
1879	2,500,000	2,225,000	4,725,000
1880	2,400,000	2,500,000	4,900,000
1881	3,000,000	3,500,000	6,500,000
1882	2,550,000	4,370,000	6,920,000
1883	1,800,000	6,000,000	7,800,000
1884	2,170,000	7,000,000	9,170,000
1885	3,409,400	9,171,983	12,581,383
1886	4,425,000	12,400,000	16,825,000
1887	5,978,536	17,817,300	23,616,085
1888	4,200,253	20,405,300	24,616,558
1889	3,794,009	20,038,871	23,832,880
1890	3,022,577	20,337,317	23,359,894
1891	2,891,386	21,138,186	24,029,572
1892	2,966,571	22,503,554	25,570,126
Total	$ 187,469,964	$ 172,971,376	$ 360,442,340

ANNUAL PRODUCTION OF COPPER IN MONTANA, FROM 1882 TO 1892, INCLUSIVE.

YEARS.	POUNDS.	YEARS.	POUNDS.
1882	9,058,284	1888	97,897,958
1883	24,664,346	1889	105,130,000
1884	43,093,054	1890	112,925,000
1885	67,797,864	1891	112,763,420
1886	57,611,621	1892	159,212,203
1887	78,699,677	Total	868,853,427

PRODUCTION OF GOLD AND SILVER IN MONTANA, BY COUNTIES, FOR THE CALENDAR YEAR 1892.

COUNTY.	GOLD.	SILVER.
Beaverhead	$ 78,829.97	$ 836,473.34
Cascade	560.37	1.54
Choteau	1,205.81	307.67
Deer Lodge	367,819.62	6,795,409.12
Fergus	1,339.76	701.77
Jefferson	186,391.61	2,177,762.97
Lewis and Clarke	667,254.93	109,448.88
Meagher	41,215.57	386,287.18
Madison	128,374.43	2,407.58
Missoula	37,827.22	610,029.75
Park	51,008.18	526.61
Silver Bow	748,786.77	10,745,744.49
Reported by outside smelters, mills and mints not otherwise included	653,503.91	838,563.75
Total	2,966,571.90	22,503,554.75

PRODUCTION OF COPPER AND LEAD IN MONTANA, BY COUNTIES, FOR THE CALENDAR YEAR 1892.

COUNTIES.	COPPER, LBS.	LEAD, LBS.
Beaverhead	159,859	3,452,442
Deer Lodge		1,000
Jefferson	334,855	9,464,305
Lewis and Clarke		116,850
Meagher		3,279,811
Missoula		4,971,210
Silver Bow	158,413,284	4,000
Reported by foreign smelters and not otherwise included	604,205	4,425,579
Total	159,212,203	25,716,197

RECAPITULATION OF VALUE OF METAL PRODUCTS OF MONTANA, YEAR 1892.

Gold	$ 2,966,571.90	Lead	$ 990,035.08
Silver	22,503,554.75		
Copper	19,105,464.36	Total	$45,565,626.06

ESTIMATED VALUE OF TOTAL OUTPUT OF THE MINES OF MONTANA, 1862 TO 1892, INCLUSIVE.

Gold	$187,469,964	Lead	$ 7,000,000
Silver	172,971,376		
Copper	104,262,411	Total	$470,703,751

The Inspector of Mines, in his annual report for the year 1892, states that notwithstanding the low price of silver, taken as a whole, the mining industry of the State is in a prosperous condition. The output of silver, copper and coal was greater than ever before, and the mines of the State gave employment to over 10,000 men. Of these 8,500 are employed in quartz mining and 1,500 in coal mines, besides a few hundred engaged in placer mining. Considering the force of men thus employed under ground the number of accidents is small, and the percentage much below that which obtains in other mining States. For the entire year of 1892 there were forty-three fatal and twenty-four non-fatal mining accidents in the State. Wages of quartz miners throughout the State is uniformly $3.50 per day; coal miners, as a rule, are paid by the ton.

IRON AND COAL.

Not only is Montana rich in the precious metals, but she has as well, in practically inexhaustible supply, iron and coal of a superior quality. Long after the mining of gold and silver, and even of copper, shall be an item of small moment in the sum total of the wealth producing industries, iron and coal will play conspicuous parts in fulfilling the manifest destiny of this great State. With the peopling and development of the new West will come the development of the iron and manufacturing resources of the State, and the Rocky Mountain region will produce in Montana a second Pennsylvania.

There are considerable deposits of iron ore in most of the mining districts of the State, but apparently the most extensive beds of the best qualities for the manufacture of iron and steel are found on the north slope of

the Belt mountains, between the mining camps of Neihart and Barker and the city of Great Falls. Hundreds of analyses of these ores have been made, and they are proven to be of a quality adapted for the manufacture of Bessemer steel, showing sixty to seventy per cent. of metallic iron without a trace of phosphorus. There are also large deposits of manganese iron ores in the same region.

With the rapid development in store for the Northwest the next few years, who can doubt that the time is near at hand when this reserved treasure of nature will be converted into pigs of iron, and they into the various articles of commerce demanded by the swelling population of the Northwest region!

The principal coal deposits of the State are found in Cascade, Choteau, Park, Missoula, and Gallatin counties. The extent of these deposits is very great, covering a considerable portion of the State and warranting an enduring fuel supply for "the millions yet to come." The general character of the coal in the counties named is semi-bituminous, and for general domestic uses and as a steam generator, it is finely adapted. A lighter coal, or lignite, and of poorer quality, is found in the eastern portion of the State. Coking coal is found in all parts of the coal district. At Cokedale, in Park county, one hundred coke ovens are in constant operation, and employment is given to about three hundred men by the company. At Horr, in the same county, there is another coking plant of nearly the same capacity. A ready sale for the coke is found at the various smelters of the State.

The Sand Coulee coal mines, in Cascade county, about twelve miles from Great Falls, are the largest producers in the State. When working to their full capacity they can produce 1,500 tons per day, but the output could be largely increased, if desired. The average production of these mines for the year 1892 was 1,000 tons daily. The coal vein is horizontal,

being a blanket vein, and is easily and cheaply worked, there being a deposit of ten or twelve feet, with over six feet of marketable coal. This is a good steam coal, and is also well adapted for general domestic purposes. Five hundred men are employed in and about the mines.

According to the report of the State Mining Inspector, Park county employs 785 men in coal mining and produces more coal than any other county in the State. The mines of Rocky Fork produce the most coal, the full capacity being from 1,200 to 1,400 tons daily. The Mining Inspector puts the average daily output at eight hundred tons. This is a steam and domestic coal and finds a ready market throughout the State.

Large and extensive deposits of coal are found in northern Missoula county (now Flathead county), and also in both eastern and western Choteau county, but as yet they have not been developed to any great extent.

Representative specimens from the coal properties named, as well as from many other mines in a less developed state, are shown in the mineral exhibit, an inspection of which will indicate the general character of Montana's coal.

SAPPHIRES AND RUBIES.

The chapter on the mines of Montana would not be complete without a reference to the precious gems found in many parts of the State, in river bars and gulches, and particularly in El Dorado Bar and vicinity along the Missouri river, twelve to twenty miles from Helena. These stones were often found in placer working, but no particular attention was paid to them as they were not deemed valuable. Six or seven years ago, the Spratt brothers undertook mining on El Dorado Bar,

a deserted placer, and in prosecuting this work found these crystals in great quantity. Some of them they had cut, and they proved to be handsome gems. Then they had them tested by experts and chemists, and the reports were invariably of the most favorable character. Believing that they had discovered a valuable property, they continued prospecting, and acquired title to, or options on, about 8,000 acres of sapphire ground on both sides of the Missouri river, securing at the same time control of the water that could be used for mining for a distance of 30 or 40 miles along the stream.

In 1891, the Spratts and others interested with them, sold their property to the "Sapphire and Ruby Company of Montana," the new company being composed principally of English capitalists. This corporation was actively engaged during the season of 1892, in constructing water ditches and flumes and making general preparations for extensive mining. The present year they begin operations on a large scale, and besides the sapphires to be secured, it is estimated that a profit will be realized on the gold alone that still remains in El Dorado and other bars.

As to the sapphires and rubies, they exist in large quantities, and time and tests have proven that they are gems of a high order, and of considerable value. The stones were fully tested by some of the best experts in the world, before the sale heretofore mentioned was consummated. To show what is thought of these gems by experts high in authority, we submit herewith brief extracts from reports made:

Edwin W. Streeter, of London, who is the author of several works on precious stones, and who is regarded as an authority on the subject throughout the world, says: "The stones have a wide range of color, and I note frequent occurrence of this, hitherto rarely obtainable in this valuable gem. I unhesitatingly say of these different colored sapphires and rubies, that in hardness

and brilliancy they excel any others known to the trade, and many of them are even more brilliant by artificial light than by daylight, which increases their value for jewelry.

"To find these stones in the unprecedented quantities indicated by your engineer's report, is a discovery of the greatest importance to the gem trade. Excepting only the South American Diamond fields, I consider the sapphire and ruby mines of Montana to be the most important gem discovery of modern times."

Mr. J. D. Yerrington, the leading gem expert of New York City, has no less a decided opinion: "Speaking from a practical experience of over thirty years in the precious stone business, I do not hesitate to say that the sapphires of Montana belong to a high order of gems, and equal in beauty, hardness and brilliancy, the sapphires from the celebrated mines of India. The intrinsic value of these gems cannot be questioned, and in my opinion, many rank second only to diamonds."

Many specimens of these gems, both cut and in the rough, are on exhibition in Montana's mineral department, and they will not fail to prove both interesting and attractive.

Agriculture.

GREAT as are the mines of Montana, from which in thirty years nearly $500,000,000 has been taken and added to the sum total of the world's wealth, they are not to be compared in point of value and importance with the treasure of soil that lies hidden beneath the unturned sod of her magnificent agricultural areas. Mines alone have not produced or maintained for any long period of time a great nation or state. The region of the "golden Pactolus" of ancient days is a desert, and the provinces that yielded the gold and silver to enrich Solomon, have no place on the map of to-day, unless agriculture has preserved them from oblivion. Happily for Montana her resources are diversified, and while she glories in the wealth of her mines, which promise a constantly increasing product for years to come, her chief and certain reliance for the future is Agriculture.

The extent of the lands of Montana susceptible of cultivation by the aid of a perfect and far-reaching system of irrigation, cannot in the absence of complete surveys and reports on the subject, be exactly determined, but a close estimate may be made. According to the official government reports, Montana has 40,700 square miles of area, out of a total of 146,000 square miles that has a less altitude above sea level than 3,000 feet, and with a complete reservoir system, at least one-half of this area could be covered with water, and will be some day, for the beauty of it is, there is an abundance of water to do it. But extensive areas, having a much higher elevation than 3,000 feet, as, for instance, the Gallatin, Prickly Pear, Sun, Smith river, Madison, Jefferson, Beaverhead and other valleys, are "garden

spots" of the State, and with the enlargement and perfection of irrigation methods, their productive area would be increased many fold. The estimates of the amount of farming land of the State vary from 17,000,000 to 40,000,000 acres, and this means valley, bench lands and foothills that may be brought under cultivation by the aid of an advanced system of irrigation. The latter estimate we believe is not too high. When the United States has a population of 200,000,000, the farmers of Montana, which will then be one of the greatest agricultural states, will till over 30,000,000 acres, enriched every year by the water that now flows at waste to the Gulf and Pacific ocean. Mr. T. G. Wood, of Augusta, Lewis and Clarke county, who presided at the Farmers' Convention held in Great Falls, Jan. 12, 1893 (the first gathering of this character in the State), looks for a grand development of our agricultural resources at a much earlier period, as witness this extract from his introductory address on that occasion:

"I venture the assertion that in ten years from now in no state will be found so many prosperous, happy farmers' homes as in the State of Montana. Water, the gift of God to the people, will be owned entirely by the people, stored in countless reservoirs and distributed on every available acre of bench and valley land, through numerous ditches, and the same water furnishing power to run farm feed mills, cream separators, churns, and other machinery needed on the farm, with their acres owned in fee-simple, groaning with crops of golden wheat, oats and barley, timothy, clover and alfalfa, good and substantial farm buildings, and a good and substantial balance on the credit side of the ledger. Then, and not until then, will Montana cease to send hundreds of thousands of dollars to the east and south for butter, eggs, poultry, lard, salt meats, flour, rolled oats, etc., through the long list of articles that are now almost exclusively supplied by our eastern and southern brethern."

Up to this time, agriculture in Montana has made comparatively little progress. Very few people have come to this State with the avowed purpose of engaging in farming, but rather have drifted into it. Mining, stock-growing and other pursuits, have had more attraction, and offered the inducement of larger profit. The situation, however, is now changing. New railroads are opening up and populating new farming sections, and the home demand for the products of the soil is constantly increasing; capital is being invested in irrigating enterprises, and the prospects are bright for the rapid development of our agricultural resources. As evidence of this advancement, note the growth of two years, as shown by the reports of the State Auditor:

	Number of Acres of Land Assessed.	Value with Improvements.	No. Sheep.	Value.
1890.....	4,855,107	$ 18,375,549	1,555,116	$ 3,634,225
1892.....	5,737,841	22,440,230	1,884,086	5,098,931

The vast extent of territory, and the sparse settlements of the ranch regions, with not the best transportation facilities, rendered somewhat difficult the task of gathering and preserving specimens for this department. The exhibit, however, is representative, and well calculated to impress on the mind of the observer that the old geographers made a fearful mistake when they included Montana in the vast and mythical region called the "Great American Desert." During August and September, products of the field and orchard for 1893, may be added, and the opportunity thus afforded of making complete and more attractive the exhibit in this department will be taken advantage of.

The principal products of our soil are oats, wheat, barley, hay, potatoes and all the vegetables, a fair showing of each of which, of the crop of 1892, will be found. They will attract attention, not only on account of the extraordinary growth of stem or stalk, but by reason of

the very large yields of the fields from which the samples are taken. It is not claimed that these yields are average, but they are by no means infrequent.

PRACTICAL RESULTS.

Lest it should be surmised that the yields indicated by the samples on exhibition are exceptional, or of forced growth in small area, we submit herewith the best possible evidence to the contrary, viz.: A table of crop reports for the year 1891 for the Gallatin valley, designated by Professor Hayden, as "The Egypt of America." These reports were published by the Bozeman *Avant Courier*, without partiality, and just as made by chance returns of the ranchers to that paper:

Name of Farmer.	No. of Acres.	Crop Raised.	Bushels Threshed.	Av. per Acre.
David Williams	90	Wheat	4,600	50½
Charles E. Hoy	100	Wheat	5,170	51¾
Sam Collett	1-16	Potatoes	52	800
John M. Robinson	43	Club Wheat	2,162	50
Mairon Flaharty	100	Wheat, Oats, Barley	6,235	62⅓
Joe Jackson	90	Wheat	3,640	40½
John Behring	85	Fall Wheat	3,900	45
Sam Fowler	35	Oats	3,160	90
T. J. Gowin	68	Wheat	3,482	51
Alfred Forswall	48	Club Wheat	2,911	61
Davis Brothers	180	Wheat	8,061	44
Samuel R. Owens	95	Wheat on Sod	4,100	44⅓
James H. Gallop	2	Peas	200	100
John B. Beck	9	Oats	900	100
Accola Brothers	175	Fall Wheat	11,690	68
W. P. Knowlton	86	Fall Wheat	4,610	52
J. H. Gallop	106	Fall Wheat	6,800	64
John D. Huffine	29	Spring Club Wheat	1,175	40½
L. W. Van Akin	70	Oats	4,278	61
Louis Lang	30	Oats	2,921	97⅓
Z. S. Morgan	300	Fall Wheat	16,381	54 3-5
Beaver Nelson	30	Club Wheat	1,904	63½
Arthur Truman	65	Wheat	3,238	50
Weckfield Morgan	112	Fall Wheat	5,945	52½
J. A. Bishop	55	Oats	5,000	91
W. W. Wylie	10½	Oats	1,125	107
E. M. Davidson	41	Club Wheat	2,200	63
C. H. Waterman	170	Oats	7,975	47
Gus Johnson	40	Wheat	2,410	60
W. A. Caldwell	140	Wheat	7,780	55 4-7
Jacob Carolus	45	Oats	2,782	62
John H. Dawes	17	Wheat	1,115	65½
John Heiskell	35	Oats	1,957	65½
Frank Heiskell	100	Wheat	5,000	50

[CONTINUED].

NAME OF FARMER.	No. of Acres.	CROP RAISED.	Bushels Threshed.	Av. per Acre.
Robert McKee	14	Oats	900	64
Pete Emmil	50	Oats	3,425	68½
John J. Henry	210	Oats	13,000	62
Pat Twohy	75	Wheat	4,300	59⅔
M. Wisner	75	Volunteer Wheat	1,755	23½
Wm. Flannery	100	Wheat	4,280	43
J. A. Melton	100	Oats	6,500	65
E. D. Johnson	100	Wheat, Oats, Barley	6,038	60
E. F. Campbell	105	Scotch Fife Wheat	5,000	48½
John Cahill	47	Scotch Fife Wheat	2,444	52
George Ruffner	21	Oats	1,700	81
Mrs. James Kent	72½	Oats	5.513	76
Chas. McReynolds	112	Oats	7,000	62
Frank Roy	95	Oats	6,200	65
J. A. McElroy	108	Oats	5,765	53
Thomas Mathews	83	Oats	5,122	61⅔
Zack Lay	25	Oats	2,340	93½
Axel Sandquist	70	Club Wheat	3,216	46
W. H. Lee	40	"Race Horse" Oats	1,970	49¼
W. H. Collins	50	Scotch Fife Wheat	2,528	50½
Lee Baynard	115	Club Wheat	7,361	64
Ben F. Bisel	60	Oats	4,606	76⅔
Nels Knutson	80	Oats	5,164	64½
Sanford Ruffner	70	Oats	4,450	63½
Horace Kelly	40	Wheat	2,030	50¾
George Biggs	60	Volunteer Wheat	1,200	20
V. E. Cline	20	Wheat	1,900	38
Jas. H. Whitaker	100	Wheat	4,000	40
Ed. H. Gooch	54	Oats, Sum. Fallow	5,077	94
Theo. L. Street	17	Oats	990	58
Edward Perring	170	Oats	14,000	82
W. D. Dunn	28	Oats on Sod	1,200	43
Jonn G Nelson	35	Wheat	740	49⅓
Rev. Geo. Comfort	40	Oats	2,000	50
W. B. Reed	213	Oats	20,251	95
W. W. Wolverton	140	Oats	5,760	41
W. H. Ellis	125	Oats	7,694	48

Reports of this character, showing like productive results, could be multiplied at pleasure from all parts of the State. The Gallatin valley has been taken as an illustration because irrigation and agriculture have reached a high degree of perfection in this region and because the reports submitted are available in printed form. In this connection we submit the following extract from the report of Mr. C. A. Gregory on Gallatin county, as published in the Appendix to the proceedings of the State Irrigation Convention held at Helena, January 7, 8 and 9, 1892:

"The crop returns in the Auditor's report are not to be relied upon as coming up to the magnitude of area or yield per acre. We know individually of one tract of 1,200 acres now in cultivation not embraced in the 1890 returns; we know of several tracts of a hundred acres and upwards brought recently under the plow not in such estimates. Fifty thousand acres are assumed as proximately the area in cultivation over and above what is fallow, i. e., is proximately the area cropped in a year. Taking the crops and hay and the vegetable and small fruit crops, we may assume a yield for Gallatin county of $1,250,000 in value. There are 35 threshing machines here. These may be estimated threshing 60,000 bushels on the average. This gives 2,100,000 bushels. The average price of the three staples I place at an assumed figure, which I am advised is fair, and from this I get $1,250,000 as a year's yield in value."

WHEAT AND OATS.

These are the principal grain products of the State, and particularly the latter, for which there is, and has always been, a good demand in the home market. The State Auditor's report for 1892, furnishes the following cereal statistics, showing the proportion of each grown, product, etc.:

	Acres Cultivated.	Bushels Produced.	Average Per Acre.
Wheat	37,828	1,250,784	33
Barley	6,160	212,501	35
Rye	547	21,174	40
Corn	2,510	62,570	25
Oats	82,872	3,395,437	40

It has not been demonstrated up to this time, that wheat can be profitably grown for export, hence its production has been limited to the demand by home millers, and the additional amount required as feed. There are fifteen flouring mills in the State and their joint product in 1892 only reached 18,700,000 pounds of flour. Sufficient attention has not yet been given to the growing of No. 1 Hard wheat, or to the manufacture of the highest grade of flour, and as a consequence, the

greater portion of this article consumed in the State is shipped from Minnesota and the Dakotas. But the State is young in agricultural experience, and it always takes time to regulate these matters. The existing conditions will not much longer obtain. It is proven beyond question that our soil will produce the No. 1 Hard wheat, and that the belt which produces this great flour grain extends from the Dakotas west to the base of the Rocky mountains. Experiments running through several years in Cascade and Choteau counties, in northern Montana, demonstrate that a superior article of No. 1 Hard can be grown on the bench lands and mesas of that section, even without irrigation, and almost invariably the yields have been large. This wheat produces an excellent article of flour, and if the facilities for manufacturing were as good, it would not be inferior to the best brands of Minnesota and other hard wheat districts. These matters of soil and product and quality have been thoroughly investigated by the Washburn-Crosby Milling Company of Minnesota, and as a result they have entered the field and are now operating at Great Falls a complete roller process flouring mill of a capacity of three hundred barrels daily, requiring 1,500 bushels of wheat, with the elevator facilities needed by such a mill. The planting of a flour establishment of this magnitude in one of the cereal districts of the State is an evidence that wheat culture in Montana is advancing, and that the day is near at hand when Montana mills will not only produce the flour needed for home consumption, but besides will supply with this staple a large population without our own confines.

The quality of Montana oats is not excelled in any part of the Union. It weighs from 40 to 45 pounds to the measured bushel, and in the home market and elsewhere invariably commands a better price than the like product of any other State. The yield of this grain is greater than that of all others combined, for the reason,

principally, that there is always a good home market for it at a remunerative price. However, it often happens that the supply of even this grain is not equal to the home demand, and considerable quantities of eastern oats are imported.

The figures of the preceding table, showing the yield of the cereals and the average per acre, is sufficient commentary on the productiveness of Montana soil. No amount of word painting could present the subject in stronger light than does that little table. An average yield for the State of 33 bushels of wheat, 35 bushels of barley, 40 bushels of corn, and 40 bushels of oats, will be a revelation to the average eastern farmer.

The market for the products of the farm is at home. Butte, with its 35,000 people, and the other mining camps of the State, as well as the several cities, are the principal consumers, and the average prices realized by the farmer are much better than those that prevail in the east. Following are fair average prices for the past year of farm products: Wheat 90 cents a bushel, oats $1.25 per cwt., barley $1.25 per cwt., timothy hay $14.00 per ton, wild hay $10.00 per ton, potatoes $1.00 per cwt., eggs 30 to 40 cents per dozen, butter 40 cents a pound and other articles in proportion.

Advantageous as such a market, with these prices prevailing, may appear, it is nevertheless true that Montana sends east annually millions of dollars in payment for farm products that could as well, and should be, produced at home. This fact was brought out in a striking way at the recent Farmers' Convention at Great Falls, where a report authorized by the Board of Trade of that city, was read, setting forth that during the Calendar year 1892, there had been imported into the city of Great Falls, and Cascade county, farm products to the amount of $366,572.34, distributed as follows:

Smoked meats	$127,522.34	Butter	$ 44,000.00
Flour	51,434.00	Cheese	5,364.00
Pork	45,600.00	Oatmeal	6,152.00
Eggs	42,400.00	Cornmeal	5,300.00
Poultry	19,700.00	Vegetables, fruits	9,800.00
Apples	6,300.00		
Potatoes	3,000.00	Total	$366,572.34

If this rate of importation is maintained throughout the State—and it would be naturally much greater in the mining districts—the value of the farm products imported during the year would reach nearly $6,000,000. And how much more prosperous Montana would be if these vast sums were put into the pockets of her own husbandmen, instead of being sent to eastern dealers never to be seen or heard of again! This situation of affairs shows the primitive condition of agriculture in Montana, and ought to suggest that the field is an inviting one for the practical, industrious, frugal man, with means sufficient to engage in general and diversified farming.

BARLEY—THE MANHATTAN COMPANY.

To show what may be accomplished in Montana by capital and intelligent, well-directed effort, we cannot do better than cite the operations of the Manhattan Farm, Gallatin county. This is owned by an eastern syndicate. Their first purchase was in 1890, of 10,000 acres of land at Manhattan, on the west side of the West Gallatin river. This was soon afterwards increased to 13,000 acres. All this land is devoted to the production of barley, and to handle the product the company built during the year 1892, a malt house with a capacity of 250,000 bushels, and an elevator having a capacity of 275,000 bushels. The first year, 1891, they cultivated 1,300 acres of barley, the product of which was fully up to expectation, and in 1892 they grew 6,000 acres of that cereal with like good results. This acreage will be multiplied many times in a few years.

In addition to this vast enterprise, the Manhattan Company are largely identified with another venture of almost equal magnitude and importance, viz.: The West Gallatin Irrigation Company. Under this corporate name, they have acquired ownership of 28,000 acres of Northern Pacific Railroad lands, and are constructing a canal to cover all this ground and 25,000 acres additional, owned by private parties and the government. This canal is 57 miles long, 24 feet wide at the top, 16 feet at the bottom, and will carry a stream 5 feet in depth. The land it covers is fertile in the extreme, but without water for irrigation it would be valueless except for pasture.

In connection with this reference to one of the most important malting and farming enterprises of the United States, would be the right place to emphasize the fact that the barley grown in Montana, a large portion of it, in the past, in the Gallatin valley, has been proven by extensive tests to be the best for malting purposes that the world produces. The demand for Montana barley by eastern maltsters and brewers for a few years past has been greater than the supply, and the grain has been exported with profit, notwithstanding the great distance it had to be transported. The establishment of the mammoth malting enterprise at Manhattan, will give an impetus to this industry not heretofore felt.

From a paper read by Mr. A. F. Schmitz, of the Montana Brewing Company, of Great Falls, at the Farmers' Convention in that city, we make the following extract:

"It is a well known fact that the barley of Montana takes first rank for brewing and malting purposes, so much so, indeed, that to-day we see an enormous malting plant established at Manhattan, in Gallatin county, by a syndicate of New York brewers, who contemplate seeding about 35,000 acres in barley, which can yield from one and a half to two million bushels, nearly as much as the whole State of Iowa, and of the best barley producing States of the Union, produced last year. The

revenue to the Gallatin county farmers is at least $1,000,000 from this one kind of industry. * * * The prosperity of our farmers depends largely upon the creation of a home market for their cereals, which can only be obtained by the establishment of such and similar industries. The Montana Brewing Company will use at the beginning from 30,000 to 40,000 bushels of barley for their own consumption. The market for malt is practically unlimited, and can be made an industry of vast importance and great mutual benefit if you and every one of you will lend a helping hand to its proper development. The raising of barley is one of the most profitable parts of husbandry, as the yield is from 40 to 60 bushels per acre, and the price from $1.10 to $1.20 per hundred pounds. Of course to obtain these satisfactory results great care must be taken to raise a barley which has all the requirements of a marketable grain."

IRRIGATION.

There are sections of the State, notably in Cascade, Choteau and Missoula counties, where certain crops have been, and may be, successfully grown without artificial irrigation, but even in these most favored districts, water is a guarantee of unfailing success, and with its aid, the productive area may be multiplied many fold, and the strength of the soil maintained through a long period of years. The valley of the Nile, the garden of the ancient world, retains its fertility to this day by the annual overflow of that stream, and in like manner the so-called arid lands of Montana, when covered with water, will constitute as grand an agricultural area as our country affords. "No one knows," said one of the delegates to the Irrigation Convention in Helena last year, "what these uninviting prairies will become when the fertility which resides in their bosom is called forth by the application of water."

As in agriculture, so in irrigation, only a start has been made in Montana. They are close akin, and hand in hand will move along the road of progress. To show what has already been accomplished towards the development of an irrigation system in Montana, we tabulate the following from the report of the State Board of Equalization for the year 1892:

IRRIGATION STATISTICS FOR THE YEAR 1892.

Counties.	No. of Irrigating Ditches.....	No. of Miles in Length.....	No. of Acres of Land under Cultivation by Ditch.....	No. Acres Land Under Ditch...	Total No. of Lateral Ditches...	Average Annual Product per Acre.
Beaverhead.....	224	465	34,031	68,099	2,228	Grains 40 bush Vegetables 171 bu. Hay 1⅓ tons.
Cascade	5	45	2,190	203,230	24	G. 38 bush. V. 200 bush. H. 1½ tons.
Choteau	11	122	19,060	351,050	266	G. 43 bush. V. 250 bush. H. 2 tons.
Custer	26	59	6,430	23,618	106	G. 55 bush. V. 160 bush. H. 2 tons.
Dawson	1	1½	40	80	5	G. 35 bush. V. 400 bush. H. 3 tons.
Deer Lodge.....	68	209	7,868	15,454	265	G. 36 bush. V. 250 bush. H. 1¼ tons.
Fergus.....	142	268	11,515	36,387	803	G. 44½ bush. V. 208 bush. H. 1½ tons.
Gallatin	195	434	26,848	43,782	1,258	G. 47 bush. V. 222 bush. H. 1¾ tons.
Jefferson.....	58	136	6,158	13,155	286	G. 41 bush. V. 191 bush. H. 1½ tons.
Lewis & Clarke	83	325	31,250	92,443	582	G. 44 bush. V. 254 bush. H. 1½ tons.
Madison	204	406	25,293	40,180	819	G. 37 bush. V. 234 bush. H. 2 tons.
Missoula.....	43	124	5,368	6,650	100	G. 43 bush. V. 360 bush. H. 1⅔ tons.
Meagher	166	226	22,919	43,122	1,726	G. 38½ bush. V. 190 bush. H. 1¼ tons.
Park.....	137	333	11,208	22,633	1,268	G. 42½ bush. V. 207 bush. H. 1⅔ tons.
Silver Bow.....	19	32	1,985	2,765	52	G. 40 bush. V. 300 bush. H. 1½ tons.
Yellowstone....	3	60	3,015	12,200	25	G. 35 bush. V. — H. 3 tons.
Total	1,390	3,245½	242,178	976,848	9,815	Grains 41½ bush. Vegetables 240 bu. Hay 1¾ tons.

HORTICULTURE.

Considering her position on the map and in the heart of the Rocky Mountain region, Montana is not exactly the State a stranger would look to for an interesting exhibit in the Horticultural line. Something of a surprise, then, may be offered. While not a large one, the Horticultural Exhibit is deserving of a share of attention. The fruit shown will compare favorably with that of any other part of the Union in size, flavor and general excellence. With the ripening of the crop of 1893, samples of apples, pears, plums and berries, fresh from the trees, will be added to the Exhibit, increasing in a marked way its attractiveness.

Like many other branches of husbandry in Montana, fruit culture is in its infancy, but the results accomplished in recent years give abundant promise for the future. Missoula county, in the northwestern portion of the State, is pre-eminently the fruit-growing section, by reason of low elevation and favorable conditions of climate and soil. According to the State Auditor's report there were grown in that county, in 1892, 11,000 bushels of apples, out of a total of 13,212 bushels produced in the State. Missoula county is also credited with 100 bushels of cherries, 71 bushels of plums and 12 bushels of pears. Other fruit counties are Meagher, with 978 bushels of apples, Madison 604 bushels, and Cascade 500 bushels. In the other counties no effort in this direction has been made, or the industry is so young as to be void of results as yet.

The Annual Number of the Missoula *Gazette* for January 1, 1892, contains an interesting review of fruit culture in that county, and as it applies with equal force to other like favored sections of the State, we make the following extracts from it:

The early settlers of the Montana valleys took up lands in the low bottoms along the streams, and it was on these bottoms that the first apple trees were planted. They grew luxuriantly and the experimenters were gratified with the outlook.

Scarcely a tree died until bearing age was reached. Then they suddenly began to wither and refused to put forth leaves. Examination showed them winter killed, due to too much irrigation and consequently too sappy a growth. The bottoms were abandoned after this for apple orchards and experiments continued on the higher lands. Success resulted. The high bench lands, dry hill sides and foot hills of the mountains, where water could be had for irrigating early in the season, were found to give gratifying results. It took several years of experimenting to make this discovery, but years of success followed, and the apple crop of Missoula county now amounts to many thousands of pounds of superior fruit. Hundreds of acres of apples, plums, cherries and pears have been planted out within the past three years. There are probably 3,000 to 5,000 bearing apple trees in the Bitter Root valley to-day, and this number will be increased greatly each successive year for some time to come, as there is no crop that is more remunerative, and more orchards are being put out this season. The apple tree begins to bear at five years of age, and at seven years can relied upon for a considerable crop. Forty pounds are frequently gathered from trees five years old. The trees do not live as long here as in the east, but this is probably owing to the fact that they begin bearing earlier and are allowed to mature all the fruit they will. The fruit sells for five and ten cents a pound, and quality (and also the tree) is sacrificed for quantity. In no country do the trees bear heavier than here. They are literally covered with fruit year after year. Some years the crop may be greater than auother, but there is no such thing known as an "off year." The crab apple, especially, is a prolific bearer, and the fruit of large size and splendid flavor. From the attention now being given the apple it is safe to predict that Missoula county is destined, within a few years, to become known as one of the great fruit regions of the country.

In grape and peach culture, no great amount of success has been achieved, but the cherry, plum and pear do reasonably well. Small fruits, as the strawberry, raspberry, blackberry, gooseberry and currants, seem indigenous to the country and flourish in all parts of the State, yielding enormously. The Montana strawberry is a luscious fruit of fine flavor and very solid berry, and may be shipped long distances without injury. The farmers af the State are now beginning to give attention to the cultivation of these small fruits, and the strawberry particularly is a very profitable crop.

DAIRYING.

No country under the sun offers superior advantages to Montana for Dairying, and yet this business is in its incipient stage, and has hardly assumed a more advanced condition than the supplying of milk daily to the inhabitants of the towns and cities of the State. There is not a large, well-equipped creamery in Montana, and the amount of butter and cheese produced is insignificant compared with the consumption of these staple articles. This condition of things in a State famous for the production of the finest stock of every kind; where land may be had at government price; where range is as free as the mountain air; where hay can be produced at a minimum cost; where the grains and vegetables best adapted for dairy feed grow to perfection; where the purest of water trickles in springs from every mountain side and flows in living streams through every valley; where the allurement of good prices in a home market is presented—is the best evidence that could be offered that agriculture in Montana is not in an advanced stage, and that opportunities for practical, intelligent effort in Dairying are many and most inviting

In the statistics furnished by the State Auditor for the year 1892, the following are given:

Counties.	No. of Cows Used in Dairy.	Pounds ef Butter and Cheese Produced.
Beaverhead	1,485	102,405
Cascade	493	61,828
Choteau	380	31,035
Dawson	333	30,075
Custer	529	72,890
Deer Lodge	450	16,200
Fergus	539	43,680
Gallatin	351	30,850
Jefferson	2,300	82,500
Lewis and Clarke	1,345	151,990
Madison	488	45,950
Meagher	178	4,650
Missoula	5,100	308,200
Park	733	32,100
Silver Bow	1,611	44,930
Yellowstone	78	2,450
Totals	16,393	1,066,732

STOCK-GROWING.

UNDER the regulations of the Board of Managers of the World's Columbian Exposition, the exhibit of live stock at the Fair will not be made until August, at which time Montana hopes and expects to be creditably represented in that department, as warranted by the importance and magnitude of the live stock industry of the State.

Under the present order of things stock-growing ranks next to mining in its importance as an industry of the State, and is a source of much profit to those engaged in the business, and of wealth to the State. This industry dates its beginning from the time of the first inroad of gold-seekers. It is stated in regard to the first bull trains to arrive at Bannack, that the animals, worn to skin and bone after their long tramp across the plains, were turned out as of no further use to the owners, with the expectation that they would not survive the rigors of the winter. But the oxen did not die. A few weeks feeding on the luxuriant and nutritious bunch grass of the valleys and foot hills gave them a new lease of life, and in the spring they turned up, to the astonishment of the miners, fat enough for beef. A repetition of this experiment on a wider scale, opened the eyes of the populace to the advantages offered for cattle-raising, which became henceforth an important business. The first ventures were necessarily on a small scale and confined to the valleys about the mining camps, but gradually the business spread to the plains, the home of the buffalo, and in a few years this animal became practically extinct, and his place was taken by domestic cattle, which have increased and multiplied until there are to-day scarcely less than 1,000,000 head of cattle on our ranges.

The range cattle business has been conducted on what is sometimes called "the haphazzard system," i. e., the stock cattle are branded and turned loose on the plains, where they are expected to rustle for an existence, winter and summer alike, receiving no further attention from the owners, except at the spring round up for branding the increase, and the fall round up to gather the beef for market.

The conditions for conducting the cattle business in this manner have been most favorable, and no range beef on the Chicago market is in as much demand or commands a higher price than the grass-fed steer of Montana. The grasses on the rolling table lands and foot hills cure on the ground, retaining their nutriment, and supply feed for the cattle from one end of the year to the other, while the cut-banks, coulees and brush along the water courses provide, in some degree, a shelter during severe storms. These facts, taken in connection with the favorable climate, have rendered the range cattle business in Montana perhaps more successful than elsewhere in the range districts that extend along the eastern base of the Rocky mountains.

But a change in this industry is gradually taking place, and it is one that means extended opportunities and greater prosperity for the State. Farmers, sheep-men and small cattle owners are invading the great ranges, and by taking up and fencing the lands along the water courses, are making it uncomfortable for the large owners, so much so, that the day is not far distant when the big herds must give way entirely to the many smaller ones, and the cattle king will be succeeded by stock farmers who will raise hay and grain, care for their stock in winter and conduct the business on better and safer principles. The past decade has marked a decided change in this direction, and the next one, except in possibly a few districts, will see the large bands divided into many lesser ones, and where one man is engaged or

employed in the business now, hundreds will be then. This inevitable change will mean also great increase in the stock industry, the improvement of the breeds, and a larger share of wealth and prosperity for the State.

The stock farmer is destined to be the successful husbandman of Montana. By stock farming, diversified farming is meant. Such a farmer does not rely solely on a crop of wheat or oats or barley, or on all of these together. He has in his well-watered and cultivated fields extensive meadows and pastures, and in his barns and sheds, or on his range, horses, cattle, sheep and hogs of the best breeds, so that his grain is marketed in the form of beef, mutton, pork, and fine roadster or draft animals. This is a fair picture of the farmer of the future, and there is room for many of them on the broad acres of this State.

According to the report of the Secretary of the Board of Stock Commissioners for the year 1892, the shipments of cattle into the State amounted to 75,000 head. The calf crop for the year was 150,000, and the number of cattle within the State shows a considerable increase. He estimates the number of cattle butchered within the State, including deliveries to Indian agencies, at 60,000 head.

The following is a summary of inspection of beef cattle by the Board since the organization of the same, the figures representing the number of cattle shipped each year to the eastern markets: 1885, 79,089 head; 1886, 119,620; 1887, 82,134; 1888, 167,602; 1889, 123,880; 1890, 174,035; 1891, 250,000; 1892, 203,000. To the figures for 1892 add the 60,000 butchered within the State, and estimating the value of each beef at $45.00, we have approximately $11,855,000 as the value of the beef crop of Montana last year.

SHEEP HUSBANDRY.

No industry has made such satisfactory and rapid progress in the State during the last decade as that of

wool-growing and there is promise of continued advancement, until Montana will become the greatest wool-producing State in the Union. According to the reports of the Department of Agriculture, Montana now has the seventh place on the list of sheep-raising States. The States taking precedence in the order named, are Texas, Ohio, California, New Mexico, Oregon and Michigan. In 1868, according to the report of the Territorial Auditor there were 1,752 head of sheep and goats in the Territory, valued at $5.50 each. From this beginning the number grew rapidly during the next nine years, and the following figures, obtained from the same source, will show the subsequent development of the industry:

1877	79,288	1885	798,682
1878	107,261	1886	968,298
1879	168,891	1887	1,062,141
1880	249,978	1888	1,453,771
1881	260,402	1889	1,368,848
1882	362,776	1890	1,555,116
1883	465,667	1891	1,507,753
1884	593,896	1892	1,883,840

Choteau, Fergus and Meagher are now the principal sheep-raising counties of the State, having more than half of the total number of sheep. Custer, Cascade, Park, Dawson, Beaverhead, Missoula, Lewis and Clarke and Deer Lodge rank next in order.

This industry is in a very prosperous condition throughout the State, and the highest success has been achieved in the production of both wool and mutton. No range product is in higher demand than Montana wool in Boston and Montana mutton in Chicago, both of which articles command the highest prices in their class.

As to the results that may be achieved in and profit derived from, this business, when carefully and economically conducted, we submit the following statement from a practical, intelligent wool grower, who takes the case of a husbandman with capital sufficient to

purchase two thousand head of sheep, places him on government land, and follows him through a period of five years. The result from a business standpoint is certainly satisfactory, and hundreds of instances in actual experience could be cited in which even larger profits have been made in five years of sheep-raising than are claimed in this suppositious case. It is impossible, of course, to make any definite statement as to the profits of sheep husbandry, as the degree of success will be largely dependent on the efforts of the owner and the nature of his surroundings. The following estimate is submitted merely as a rough outline of the results possible under present conditions, and not as a statement claiming to be absolutely exact in every detail:

We will take a prudent, industrious man who understands the business, and who has sufficient capital to embark in the industry on a profitable basis, locate him on government land well adapted for sheep-raising, and follow him in his operations during a term of five years;

INVESTMENT.

2,000 stock sheep at $2.50	$ 5,000.00
House, corrals, stables, horses, machinery, etc.	2,500.00
20 rams at $15	300.00
	$ 7,800.00

EXPENSE OF RUNNING, ETC.

One herder, wages and board, one year	$ 600.00
One man help, wages and board, one year	600.00
Three extra men four months for lambing and haying	600,00
Depreciation of perishable property, say 10 per cent. on $2,500	250.00
Loss due to natural causes, 40 head at $2.50	100.00
Shearing at 10 cents per head	196.00
Freight, taxes, salt, etc.	200.00
Incidental expenses	175.00
	$ 2,721.00

INCOME.

Wool from 1,960 sheep	$ 1,960.00
Increase, 800 at $2.50	2,000.00
	$ 3,960.00

Net profit on investment, $1,239.00, or about 16 per cent. for first year. The increase is figured at full value of $2.50 per head, as the lambs in the original band have been increasing in value during the twelve months. It might be possible to turn off some 300 mutton wethers at the end of the first year, as the purchase is supposed to be a mixed brand of both sexes and of all ages. He would realize, say $3.25 per head for such wethers, which would increase his net profit to $1,464.00, or about 18¾ per cent. He would then commence the second year with 2,460 head of sheep.

The expense of running, etc., would be approximately the same as for the first year, but in round figures may be put down at $2,900.00. His income would figure out about as follows:

Wool from 2,410 head.....	$ 2,410.00
Increase, 960 head at $2.50.	2,400 00
	$ 4,810.00

Showing a net profit of $1,910.00, which would be increased to $2,135.00 by selling off another bunch of 300 mutton sheep the second year. The third year would then commence with 3,070 head, too many to be safely handled by one herder and necessitating extra help. On the basis given for the first year, it is reasonable to place the running expenses of the third year at about $3,700.00, and the income as follows:

Wool from 3,010 head.....	$ 3,010.00
Increase, 1,200 at $2.50.....	3,000.00
	$ 6,010.00

Net profit, $2,310.00, which would be swelled to $2,535 by selling another bunch of 300 muttons. He would then commence the fourth year with 3,910 head, and his expenses would be say $4,000.00. His income for his fourth year's business would be:

Wool from 3,830 head.....	$ 3,830.00
Increase, 1,530 at $2.50.....	3,825.00
	$ 7,655.00

Showing a net profit of $3,655.00. The 400 wether lambs of his first year's increase should now be ready for market, and if sold at the rate quoted should swell the net profits for the fourth year to $3,955.00. The fifth year would then commence with about 4,960 head, and expenses might be placed at $4,800.00. The record of the fifth year would be about as follows:

Wool from 4,860 head.....	$ 4,860.00
Increase, 1,940 at $2.50.....	4,850.00
	$ 9,710.00

Net profit for the fifth year, $4,910.00, which would be increased to $5,210.00 by selling the wethers of his second year's crop of lambs. In this estimate it is figured that deaths from ordinary causes average 2 per cent. per annum; an unforeseen disaster might interfere with the calculation, which is based upon conditions usually existing. The rate of annual increase is figured at 40 per cent. of the whole number and the remarkable showing made is due to the fact that this percentage is compounded every year, less the proportion of mature wethers which can be sold to advantage. At the end of the fifth year the assets of our illustration should be somewhat as follows:

Cash balance from sale of wool and mutton.....	$ 3,400.00
Ranch property, house, sheds, etc.....	2,500.00
Sixty-four hundred head stock sheep at $2.50.....	16,000.00
	$ 21,900.00

Or something like 23 per cent. per annum on the investment, compounded annually. It is but fair to state that as his business increased, the party referred to might find it necessary to acquire additional land and incur expense in improving the same; but as such an investment has a permanent value, it would not materially affect the result shown above.

The sheep and wool statistics for the year 1892, in accordance with the returns of the several county assessors, are as follows:

MONTANA SHEEP STATISTICS FOR THE YEAR 1892.

Counties.	Number of Sheep.	Assessed Value per Head.	Total Assessed Value.	No. of Pounds of Wool.
Beaverhead	52,061	$ 2.52	$ 131,684	273 921
Cascade	106,677	2.49	226,602	596,190
Choteau	398,705	2.49	996,761	1,781,467
Custer	224,411	4.00	897,644	1,196,735
Dawson	106,751	2.49	260,868	419,930
Deer Lodge	40,280	2.60	105,700	120,480
Fergus	360,192	2.50	900,480	1,954,230
Gallatin	3,905	2.51	9,810	13,250
Jefferson	3,200	2.50	8,000	66,000
Lewis and Clarke	37,076	2.28	84,670	281,900
Madison	14,467	2.49	36,165	108,500
Meagher	264,965	2.49	661,620	1,787,650
Missoula	17,019	1.63	27,755	92,000
Park	117,551	2.50	294,848	869,448
Silver Bow	1,339	2.26	3,035	7,100
Yellowstone	135,241	3.00	405,723	611,780
Totals	1,883,840		$ 5,097,455	10,180,941

The prices paid for Montana unwashed wool in the local market the past ten years, varying according to the market and the condition of the clip, were substantially as follows:

1883.....20 to 23 cents	1888.....16 to 19 cents
1884.....10 to 20 cents	1889.....20 to 23 cents
1885.....16 to 18 cents	1890.....17 to 21 cents
1886.....21 to 24 cents	1891.....16 to 18½ cents
1887.....19 to 22 cents	1892.....16 to 19 cents

HORSES.

The bunch grass horse of Montana, whether the native cayuse, the ordinary road or draft horse, or the thoroughbred, is an animal of peculiar merit and established reputation. The climate, grasses and general conditions are such as produce the highest type of animal, of which fact the achievements of the Montana horse on the American turf is ample evidence.

The range horse business has maintained a steady and healthy growth, as the following table, showing the

number of horses on the assessors' lists each year since 1879, bears witness:

1879	44,416	1886	127,748
1880	51,365	1887	136,978
1881	63,114	1888	142,040
1882	67,802	1889	160,940
1883	89,311	1890	161,962
1884	99,843	1891	161,311
1885	114,925	1892	169,259

Much attention is now given to the raising of the best breeds of horses of all classes, and there are a number of horse ranches in the State that will compare favorably with any in the world. A comparatively few years of effort in this direction has made Montana famous as the producer of some of the fleetest animals on the turf, and the future in this particular is full of promise. The blue grass region of Kentucky must give way to the bunch grass valleys of Montana as a breeding ground.

THE LADIES' DEPARTMENT.

THE ladies of Montana have been zealous co-workers in World's Fair matters. By effective organization in the several counties, under the general direction of the lady managers, they have been able to accomplish most satisfactory results, and the visitor at the Exposition who is interested in Montana will find in the Woman's Building and in the Montana State Building many evidences of their handiwork and genius.

The women of Montana have imbibed the spirit of push and enterprise and self-reliance for which the citzens of this commonwealth are justly famous, and in nearly all the walks of life have achieved success and prominence. Nowhere are better opportunities afforded for women to make their way and their mark in the world than in Montana. Our statutes offer the least possible check to their ambitions, but, rather, are extremely liberal in that direction. The first step toward equal suffrage has been taken by granting to women the right to vote in all school affairs and to hold official positions in that department. By filing articles of sole tradership a married woman may engage in business on her own account, and run it according to her own sweet will, without intervention by her husband or responsibility for the latter's business blunders. There is no avocation that is not open to women, and few in which she has not already achieved well-earned distinction. The law and medicine have distinguished female representatives in the State, as has journalism, art, dentistry, commerce, etc. The "cattle queen" of Choteau

county is not less successful in conducting her business than is the "king" of the same range, and when she takes her beef crop to Chicago, in person, her account of sale will compare favorably with the best. The "gentle shepherdess of Montana" had little capital other than pluck and self-reliance when she came to Montana a decade ago, but when, a few years since, she joined hearts, flocks and range with her neighbor, she was the owner in her own right of 10,000 head of sheep. Many women own and operate mines in the State, and a few have even won renown as prospectors. In brief, the Montana woman is equal to every situation and emergency, and when either force of circumstance or choice, requires that she shall do battle with the world, she is as strong and heroic, as in her home or in the realm of religion and charity, or in the social circle, she is all that is good and true and beautiful and womanly.

It would take many of these pages to give a description of the articles that have been added to the Montana Exhibit by the ladies of the State. By their own exertions they have raised nearly $5,000 which has been expended to the best possible advantage. They have contributed twice the amount asked of them to the Children's Building, while few other States even reached their quota. They have attended to the furnishing and decorating of the State Building. They have responded to almost every request of the national board of lady managers, and, in proportion to their numbers, have made perhaps a more creditable showing than the ladies of any other State. Herewith is submitted briefly some of the work that has been accomplished in the several counties, with a description of a few prominent articles offered by the ladies of Montana, to be found in either the Montana State Building or the Woman's Building:

The ladies of Madison county contributed a beautiful table of native red cedar and jasper with a chair of the same material, which have a place in the Woman's Building, The scientific exhibit of the flora of the State, about 700 specimens, in

the Woman's Building the work of Mrs. Lydia Fitch of Sheridan, is something unusually fine. The ladies of this county also contributed several handsome articles for the State Building.

Among the attractive articles contributed by the ladies of Beaverhead county is a wooden panel for the wainscoting of the Woman's Building. It was designed and carved by a woman and consists of a beaver's head, with a border of wild primrose; also a table for the State House, of unique design, the top being inlaid with a great many varieties of native wood. On the side is a panel of silver from the Hecla mine, on which is engraved "from the ladies of Beaverhead county."

The ladies of Silver Bow county have a varied and excellent exhibit including revolutionary relics, needle work, paintings, photographs, mineral from mines owned by women, etc. The shield and silver bow, and the arrangement of the flora of the State, the latter by Mrs. Clinton Moore, are articles that will attract the greatest attention. The shield and silver bow, symbolical of Silver Bow county, is beautiful and artistic and must be seen to be appreicated.

The ladies of Missoula county have furnished samples of choice fruits; a panel for the Woman's Building carved in native wood, and a choice lot of Indian curios, presented by Mrs. Peter Ronan.

Among many other things Deer Lodge county has displays of the flora of the State; prepared by Miss Hobson, Miss Emma Ware and Mrs. King. A fine oil painting by Miss Woolfolk appears in the Woman's Building.

Lewis and Clark county excels in its exhibit of needle work, that shown by Mrs. L. H. Hershfield being exceptionally fine. The ladies of this county have expended $1,200 in a fountain, to be found in the Woman's Building, which is a thing of beauty and a joy forever. Its base is of native granite, three and one-half feet square, surmounted by a rare collection of Montana specimens, and rising up from it is an exquisite column of pink manganese, beautifully polished. The support of the bowl is of pink and white quartz, and the bowl itself is of solid silver, lined with gold. Springing from the granite base and winding its way about the column until it surmounts the bowl is a silver vine, representing our native blue clematis. The water is to be conducted through the vine and find its outlet through the silver blossoms drooping over the basin. Other exhibits from this county are collections of china, painting of Montana scenery and various works of art.

Cascade county's ladies contributed a beautiful urn or vase of sand stone for the Woman's Building, besides many other articles.

Gallatin county ladies furnished a handsome ornament for the walls of the Woman's Building, being the Montana coat of arms in gold, silver and sapphires. Other exhibits are needle work, paintings, taxidermy, a lace handkerchief made by a lady 74 years old, etc.

A Park county lady enters the stenographic contest, sending a specimen of her work. Indian curios, books for the Woman's Library and other articles are shown by the ladies of this county.

In the Woman's Building is a chair made of horns of wild animals, with a seat of deer skin, all beautifully ornamented and made by a woman of Yellowstone county; also a wreath of flowers made of wool.

Mrs. Zoe Harmon, a niece of the late Sitting Bull, sends from Custer county an interesting collection of relics of the chief.

In the Woman's Building is a beautiful silver and gold miner's candlestick, designed by a Jefferson county woman and made by a Butte jeweler. It is engraved "From the Ladies of Elkhorn," and is the offering of the ladies of that mining camp.

Other counties have contributed money and articles of more or less interest, and to attempt a description of all would be out of the question. Several inventions by Montana women and books written by them are on exhibition. Mrs. D. W. Fiske, of Helena, was invited by Prof. Thomas to take part in the opening musical programme, and in almost every line the ladies of Montana have shown an ability and capacity that is creditable to them and to the State. For the results achieved in this department great credit is due the lady managers. Mrs. Gov. J. E. Rickards, Mrs. L. E. Howey, Mrs. Clara L. McAdow and Mrs. Walter Cooper have been untiring in their efforts and the State has reason to be proud of their achievements.

Miscellaneous.

NATURE has endowed Montana most liberally. In mining, in agriculture, in stock-growing, and in every form of husbandry her wealth of resource can hardly be estimated; but to round up the measure of good things, and make sure that no essential is lacking in the combination, about 14,000,000 acres of her domain were covered with a fine growth of timber. This grows on the mountain ranges, from foot-hill to crest, and besides being a conservator of water supply for the mighty rivers that have their source in Montana, is a guarantee of almost perpetual timber product for mining and all domestic purposes In the northwestern portion of the State (Missoula county), besides covering the mountain sides, the pine forests encroach on the valleys, and it is in this section that the lumbering industry has assumed the greatest magnitude.

* * *

Montana is proud of her schools and her school system, and the exhibit made in this department, representing the work of pupils in the schools of Helena, Butte, Great Falls, Bozeman, Missoula, and other cities and towns, is not among the least of the attractions from the Mountain State at the Exposition. It will compare favorably with like work from any of the older States, and may be taken as proof of the fact that our educators are fully abreast of the times, and our children as bright and keen as the best of them. From its earliest territorial days, Montana has been solicitous for the proper education of her youth, and to-day the school system of this State is

the special pride of its citizens. This could not be more fully shown than by the presentation of the following statistics for the year 1892, compiled from the official report of the State Superintendent of Public Instruction:

FINANCIAL SCHOOL REPORT FOR THE YEAR 1892.

Receipts.

Cash on hand August 31, 1891, all districts	$153,520.08
School money apportioned during the year	425,866.91
Amount of money raised by special tax	97,534.41
Amount from all other sources not named	25,083.05
Amount received from sale of bonds	290,379.72
Amount received from premium on bonds	3,215.73
	$995,585.40

Payments.

Expended for teachers' wages	$316,822.06
Expended for libraries	1,281.34
Expended for school apparatus	11,536.50
Expended for sites, buildings, etc	270,880.05
Expended for incidental expenses	49,840,92
Expended for bonded debt	27,432.52
Expended for interest on bonded debt	29,032.61
Amount remaining on hand August 31, 1892	272,671.64
Total	$995,585.40

OTHER SCHOOL STATISTICS FOR THE YEAR 1892.

Number of districts in the State	483
Number of teachers employed	659
Number of children between 6 and 21 years of age	29,426
Number of children attending school during the year	21,768
Number of school houses	422
Value of school houses and sites	$1,569,355.63
The State expended per capita for the number of pupils enrolled, for school purposes	$44.14

* * *

To the lovers of the science of Botany, the exhibit from Montana in this department will prove of more than ordinary interest. The collections, many of them

of rare and beautiful varieties, were gathered and preserved under the personal direction of Rev. F. D. Kelsey, Sc. D. who has recently accepted the chair of botany in Oberlin (Ohio) College. In this collection there are about 1,000 specimens, among them a number of rare plants, not found in other States. The great variety of grasses of the State is fully represented. Mrs. Clinton Moore, of Silver Bow county, has prepared a collection of the flora of the State, under the direction of the Botanical Department of the Exposition, which is exhibited in pillar form in the Woman's Building. There are 800 specimens in this collection. Mrs. Lydia Fitch, of Beaverhead county, has also prepared a collection of about 700 specimens, which is shown in the Woman's Building, partly in books and partly in frames or wall hangings. Altogether the Montana Botanical display is a most interesting and attractive one, and to those who have made a study of the subject, the exhibit will prove a special attraction.

* * *

The resources of the State are interestingly set forth by the Northern Pacific Railway in an exhibit made in two elegant cars that have a place in the Transportation Building. Here will be found a few samples or specimens in all the departments, originally intended for the State exhibit, but which have been loaned for this special display. The Northern Pacific Railway crosses the State from east to west, passing through the counties of Dawson, Custer, Yellowstone, Park, Gallatin, Silver Bow, Meagher, Jefferson, Lewis and Clarke and Missoula, so that an exhibit from each of these divisions would faithfully represent the varied resources of the State. Montana does not suffer by comparison with the other States represented in these cars.

* * *

The population of Montana, as shown by the census of 1880, was 39,159, and in 1890, 132,159, an increase

of 93,000, or 237 per cent., in ten years. There has been a large increase of population in the last two years, or since the census was taken. In that time (two years) the average daily attendance at the schools of the State has increased 50 per cent. In 1890 the vote of the State was 31,990, which, in 1892, was increased to 44,300. Basing an estimate on these increases, Montana's population, January 1, 1893, can be conservatively placed at 200,000. Following is the population of the State by counties, as shown by the last census:

Beaverhead	4,655	Lewis and Clarke	19,145
Cascade	8,755	Madison	4,692
Choteau	4,741	Meagher	4,749
Custer	5,308	Missoula	14,427
Dawson	2,056	Park	6,881
Deer Lodge	15,155	Silver Bow	23,744
Fergus	3,514	Yellowstone	2,065
Gallatin	6,246		
Jefferson	6,026	Total	132,159

The population of the principal cities of the State, by the same census, is as follows:

Helena	13,834	Butte	10,723
Great Falls	3,979	Anaconda	3,975
Missoula	3,426	Livingston	2,850
Bozeman	2,143	Walkerville	1,743
Marysville	1,489	Deer Lodge	1,463
Granite	1,310	Meaderville	1,075
Phillipsburg	1,058	Dillon	1,012

It should be explained that the population given Butte represents only the enumeration within the original corporation, not including its many suburbs, which really constitute part of the city. Since this enumeration was made Great Falls, Butte and Anaconda have increased rapidly in population, and Missoula county in general (it was divided into three counties—Missoula, Flathead and Ravalli—by the Third Legislative Assembly) has shown a marked growth. In fact, there has been an increase of wealth and population all along the line since the census of 1890:

* * *

VOTE FOR PRESIDENT BY COUNTIES, ELECTION HELD NOVEMBER 8, 1892.

COUNTIES.	Harrison.	Cleveland.	Weaver	Bidwell.
Beaverhead	729	463	155	20
Cascade	1,295	1,184	337	48
Choteau	788	676	35	19
Custer	680	537	66	8
Dawson	343	268	23	8
Deer Lodge	1,930	2,152	1,319	40
Fergus	766	560	31	21
Gallatin	998	1,144	80	82
Jefferson	740	730	447	28
Lewis and Clarke	2,014	2,093	1,0 3	100
Madison	762	634	151	14
Meagher	839	735	292	14
Missoula	2,045	2,340	706	45
Park	1,192	1,048	123	30
Silver Bow	3,251	2,648	2,473	54
Yellowstone	479	369	23	18
Total	18,851	17,581	7,334	549

TAXATION STATISTICS BY COUNTIES, 1892.

NAME OF COUNTY.	Total Assessed Value of all Taxable Property.	Total Rate of State and County Taxes.	Estimated Amount of Money to be Collected for	
		Mills.	State Purposes.	County Purposes.
Beaverhead	$ 3,280,559.00	16⅛	$ 7,955.36	$ 42,958.92
Cascade	13,356,929.00	13	33,392.32	136,841.13
Choteau	6,076,348.00	18	14,500.00	81,200.00
Custer	6,926,506.00	15	17,316.00	76,191.57
Dawson	3,396,341.00	17½	8,391.00	43,402.43
Deer Lodge	8,112,246.00	19	20,280.00	113,459.00
Fergus	4,571,180.00	16½	11,427.95	57.139.75
Gallatin	5,850,568.00	15½	14,630 37	68,986.82
Jefferson	4,272,447.00	16 6-10	9,880.00	55,328.00
Lewis and Clarke	24,182,240.00	10½	60,455.60	145,093.44
Madison	3,001,870.00	19	7,504.27	46,666.48
Meagher	5,605,440.00	17½	12,333.60	69,335.73
Missoula	9,638,031.00	13½	24,095.00	67,466.00
Park	5,454,688.00	16 6-10	13,636.72	68,183.59
Silver Bow	21,096,344.00	15½	52,740.86	232,059.78
Yellowstone	3,824,180.00	19½	9,513.36	53,355.60
Totals	$128,645,917.00	.....	$318.052.41	$1,357,668.24

RAILROADS OF THE STATE.

Number of railroads in the State	29
Number of miles of railroad	2,662
Total assessed value of all railroads	$ 9,287,532
Total assessed value of all property	11,813,431

STATISTICS HELENA LAND OFFICE, 1892.

Number of Homestead entries	1,660
Number of Mineral entries	278
Number of Mineral applications for Patents	236
Number of Desert Land entries	233
Number of Coal Land entries	24
Number of Agricultural Patents issued	873
Number of Mineral Patents issued	549

RELIGIOUS STATISTICS. 1892.

Churches.	No. of Ministers.	No. of Church Buildings.	Member-ship.	Total Value of Church Property.
Methodist Episcopal	38	51	2,157	$ 220,000
Baptist	15	14	850	84,300
Presbyterian	27	28	1,436	240,000
Episcopal	15	.....	1,514	229,541
M. E. Church South	13	15	664	.....
Church of Christ	11	9	588	65,000
Catholic Churches	33	43	27,909	191,100
Totals	152	160	33,118	$ 1,029,941